



Alumni: Claire White, Princeton University

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Claire White now at Princeton University

When deciding on a career path, you might say Claire White, a former Director's Postdoctoral Fellow from 2011 to 2013, favors the concept of "and." The Australian native originally arrived at the Lab in fall of 2008 as a user at the Lujan Neutron Scattering Center spending more time there in 2009 before becoming a postdoc research assistant in 2010. As an associate she worked for the Lujan Center *AND* the Center for Nonlinear Studies. As a Fellow she continued to work at the Lujan Center splitting her time between there *AND* the Physics and Chemistry of Materials group. These days finds her at Princeton University where she works as an assistant professor in the Department of Civil and Environmental Engineering *AND* the Andlinger Center for Energy and the Environment.

Today finds her working to make a more environmentally sustainable but durable concrete.

"Right now five to eight percent of the world's CO₂ emissions come from concrete, specifically the manufacturing of its cement component. With the population of India and China expecting to double in the next decade or so, the need for new buildings will multiply and so could the associated harmful emissions due the creation of vast amounts of cement needed for these buildings," said White.

She and her fellow researchers are working on two aspects of this issue, alternative concrete chemistries that have significantly less impact on the environment as well as using simulations to figure out how such mixtures would hold up over 50 to 100 years.

One concept being explored is the use of by-products of steel industry, namely slag, to make concrete.

"We're exploring how these slag-product concretes work on an atomic level so my background with the Lujan Center helps with that from an experimental level," said White, "and my time with the Theoretical Division helps me develop simulations that would mimic degradation of the materials over decades. With a building boom on the horizon, simulations are the only way we're going to understand how these substances age naturally without having to wait 50 to 100 years to find out."

In addition to her recognition as a Lab Director's Postdoctoral Fellow, she has also received: the Discovery Early Career Research Award (Australian Research Council, 2013), Outstanding Student Research Prize in recognition of outstanding accomplishment in the area of neutron scattering (Neutron Scattering Society of America, 2012) and the Australian Postgraduate Award (Australian Research Council, 2007-10).

White would like to acknowledge some of people who supported her during her time at the Lab: Katherine Page (profiled in a [previous issue of this publication](#)) and now at Oak Ridge National Laboratory; Neil Henson, with Physics and Chemistry of Materials; Bob Ecke and Aric Hagberg, Center for Nonlinear Studies.

You can visit [her Princeton University page](#) for more information.

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